

A REVISION OF THE
PONERINE ANT GENUS *PLECTROCTENA*
F. SMITH (HYMENOPTERA : FORMICIDAE)

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SYNOPSIS

The ponerine ant genus *Plectroctena* is revised. Three new species are described and eight new synonyms established. Keys are presented for the worker caste and for the known females. The affinities of the genus are discussed and the constituent species described. The genus *Cacopone* is synonymised with *Plectroctena*. The species *mabirensis* Arnold is transferred to *Psalidomyrmex* André, establishing a new combination. Known biological information on the species is included.

INTRODUCTION

THE sixteen known species of this small ponerine genus are restricted to the Ethiopian region. The majority are found only in the rain forest zones of West and Central Africa but a few species are found in the southern and eastern parts of the continent, and one is apparently restricted to the offshore Principe Island in the Gulf of Guinea. One species of central African origin has been recorded from the island of Fernando Po (Eidmann, 1944).

Nests are made directly into the earth (Arnold, 1915) or are built in extremely

rotten or collapsed logs. A dealate female of one species, *minor* Emery, has been found in a fallen and rotting carton nest of a species of *Crematogaster* Lund.

Foraging is subterranean or cryptic and workers are often found beneath the bark of rotting logs. The workers forage singly or in small processions of two or three individuals. The main food of the genus appears to be millepedes and beetles (Arnold, 1915) although some species may also feed on termites and other soft-bodied arthropods which inhabit rotten wood. The feeding habits of the smaller and completely subterranean species are not known.

Previous publications on the genus are mostly represented by scattered descriptions of new forms and notes on distribution. Arnold (1915) gave notes on the South African species and Wheeler (1922a) included a few notes and comments on some of the central African species. A review of the genus was undertaken by Santschi (1924) which was little more than a vehicle for the description of numerous new, mainly infraspecific forms. His text is littered with contradictions and mistakes and the key presented therein is of little value. No attempt was made to ascertain the variation inherent in the commoner species.

The present paper is thus an attempt to delimit the known species more accurately and to give some insight into the variation, distribution and known habits of the members of this interesting small genus.

ABBREVIATIONS OF MUSEUMS

BMNH	British Museum (Natural History), London.
IE, Naples	Istituto di Entomologia Agraria, Naples.
IE, Bologna	Istituto di Entomologia, Bologna.
MCSN, Genoa	Museo Civico di Storia Naturale, Genoa.
MCZ, Cambridge	Museum of Comparative Zoology, Cambridge.
MNHU, Berlin	Museum für Naturkunde der Humboldt-Universität, Berlin.
MRAC, Tervuren	Musée Royal de l'Afrique Centrale, Tervuren.
NM, Basle	Naturhistorisches Museum, Basle.

MEASUREMENTS AND INDICES

Total Length (TL). The total outstretched length of the individual, from mandibular apex to the gastral apex.

Head Length (HL). The straight-line length of the head in perfect full-face view, measured from the mid-point of the anterior clypeal margin to the posterior-most point of the occipital margin (i.e. in species with a strongly concave occipital margin the head length is measured to the mid-point of a line connecting the posterolateral projections).

Head Width (HW). The maximum width of the head measured behind the eyes in full-face view.

Cephalic Index (CI). $\frac{HW \times 100}{HL}$

Mandibular Length (ML). The straight-line length of the mandibular blade measured from the apex to the point at which the outer margin meets the clypeus.

Mandibulo-Cephalic Index (MI). $\frac{ML \times 100}{HL}$

Scape Length (SL). The straight-line length of the scape, excluding the basal constriction or neck.

Petiole Height (PH). The height of the petiole measured in profile from the apex of the ventral process vertically to a line intersecting the dorsalmost point of the node.

Petiole Length (PL). The length of the petiole node from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation.

Lateral Petiole Index (LPI). $\frac{PH \times 100}{PL}$

Dorsal Petiole Width (DPW). The maximum width of the petiole in dorsal view.

Dorsal Petiole Index (DPI). $\frac{DPW \times 100}{PL}$

Ocular Diameter. The maximum diameter of the eye measured across the circumocular groove or impression.

All measurements are expressed in millimetres.

DEFINITION OF THE GENUS

PLECTROCTENA F. Smith

Plectroctena F. Smith, 1858 : 101. Type-species: *Plectroctena mandibularis* F. Smith, loc. cit., by monotypy [= *Ponera caffra* Spinola, 1853 : 70 (attributed to Klug), *nomen nudum*].
Cacopone Santschi, 1914b : 325. Type-species: *Cacopone hastifer* Santschi, loc. cit., by monotypy. **Syn. n.**

Worker. Black, brown or reddish ponerine ants belonging to the tribe Ponerini. Monomorphic, with notable size variation in some species. Lifeway subterranean or cryptic with nest sites in the earth or in rotten wood. Size ranges from medium to very large (TL 5.6–23.5).

Mandibles elongate, linear, somewhat curved at least in the distal half, $ML > 0.5 HL$ (measured range of MI 70–95). Mandibular blades edentate or armed with one or two teeth and with a longitudinal groove on the inner half of the dorsal surface which runs part or all the length of the blade. Mandibular articulation associated with a marked excavation of the anterior margin of the head in front of the eye. Palp formula of maxillary 3-, labial 4-segmented (dissections of *conjugata*, *cristata*, *mandibularis*, *minor*, *strigosa*) or with the labial palp 2-segmented (*subterranea*). Antennae 12-segmented. Eyes small, minute or absent; when present they are situated anterolaterally upon the head, usually on the dorsal surface and are surrounded by a circumocular groove or impression. Median portion of clypeus short, vertical, overhung by the strongly developed lobes of the frontal carinae. Dorsum of alitrunk with a single developed suture, the promesonotal. Track of metanotal groove faintly visible in individuals of some species. Propodeal declivity bordered on each side by a raised ridge or lamina which sometimes also extends across the dorsum. Femora of middle and hind legs with a mediodorsal thin strip of cuticle or a shallow groove which extends for at least the basal one-third of the length of the femur. Middle and hind tibiae each with a single pectinate spur, the lateral spur absent. Pretarsal claws simple. Petiole a node of variable shape; gaster very strongly constricted between the first and second segments.

Female. As worker but somewhat larger; either alate with fully developed flight sclerites

or ergatoid. Ocelli present in alate forms, reduced or vestigial in ergatoids. Eyes larger than in workers.

The known females are discussed below.

Male. Mandibles very reduced, edentate, short, roughly rectangular in shape and apparently failing to meet apically at full closure. Palp formula of maxillary 5 or 6 segments, labial 4 segments (*mandibularis*), the apical and penultimate maxillary palpomeres fused or separate (degree of fusion is variable and may be greater in one palp than the other on the same specimen). Antennae 13-segmented, very long and filiform. Scape and first funicular segment short, their combined length equal to or less than the length of the second funicular segment. Clypeus well developed, broad. Frontal carinae strongly developed into triangular or rounded lobes which are elevated at an angle of about 45 degrees. Eyes large, ocelli well developed. Pronotum not overhung by mesoscutum in front, the latter with notauli and parapsidal furrows present. Scutellum swollen and somewhat dome-shaped and prominent in profile, commonly with a median longitudinal impression dorsally. Legs with femora lacking the mediodorsal thin strip or groove, the tibiae of the middle and hind legs each with a single pectinate spur. Pretarsal claws with a small median tooth. Hind wing with anal lobe present. Genitalia retractile, gonopalmi present. Parameres thick and blunt, bowed outwards, curving towards one another apically. Digitus of volsella right-angled, with the apical portion thickened and equipped with numerous minute, dentiform structures on the side facing the cuspis; the latter bowed toward the digitus. Aedeagus a pair of large plates, the ventral portions of which are strongly sclerotized and serrate, the teeth recurved.

NOTES ON THE GENUS

THE FEMALES OF THE SPECIES.

Of the 16 described species females of 11 are known or are associated for the first time in this paper. Of these 11, four are ergatoid, the remainder being normal alate forms with developed flight sclerites. The species with ergatoid females include *cristata*, *dentata*, *conjugata*, and the type-species *mandibularis*; females are unknown for *anops*, *hastifer*, *laevior*, *macgeei* and *strigosa*; the rest have alate queens.

Wheeler (1922a : 88) described a third form of female as apterous and attributed it to *minor*. His description is very short, but from the size and colour of the individual it seems certain that his specimen is not *minor*. I have not seen the specimen but it may represent an otherwise unknown species as it is not easily applicable to any presently known form. I would not be surprised if a re-examination of this queen reveals that its wings have been lost in quite the normal manner.

Santschi (1924 : 155) stated that the female of *gestroi* is ergatoid, which is not the case, and gave *latinodis* as being apterous. I have examined the syntype and a second female of *latinodis* and find that the wings have been lost in the normal manner and that remnants of the detached forewings are visible, projecting from beneath the tegulae.

AFFINITIES OF *Plectroctena*.

Emery (1911) grouped *Plectroctena* with the genera *Trapeziopelta* Mayr

Myopias Roger and *Psalidomyrmex* André in a subtribe Plectroctenini of tribe Ponerini. Forel (1917) retained this arrangement and added *Cacopone* to the group as Santschi (1914b) had already stated that this genus was related to *Psalidomyrmex* and *Myopias*. Santschi (1924) added *Promyopias* Santschi to the list of genera in the subtribe and it has remained as such to the present day.

The characters given to link these genera were always tenuous and seemed to rest, rather uneasily, upon the fact that the members, except *Psalidomyrmex*, possessed elongate or linear mandibles. Emery (1911) characterised his subtribe by sculpturation, which is so variable amongst member-species as to be meaningless, and by the development of the lateral tibial spurs which were given as rudimentary or absent. Brown (1963) has pointed out that this character was much over-emphasized in the past but amongst the genera at present under discussion it is of use in separating them. Thus, *Trapeziopelta*, *Myopias* and *Promyopias* each have a recognizable lateral tibial spur in addition to a strongly developed median spur, whereas in the remainder this lateral spur is lacking or is indistinguishable from the surrounding setae.

Observation of the species in these genera implies that *Myopias* and *Trapeziopelta* are closely related and are derived from the *Pachycondyla-Bothroponera* complex of the tribe Ponerini, whereas the true affinities of *Promyopias* appear to lie with *Centromyrmex* as the median spurs of the middle pair of legs are reduced whilst those of the hind legs are fully developed. Also the extensor surfaces of the tibiae and basal tarsal segments of the mid legs are equipped with spines and the gaster is not constricted behind the first segment.

Of the three remaining genera, *Cacopone* is now known to be a synonym of *Plectroctena* (see note 3, below) and *Psalidomyrmex* appears as the genus most closely related to *Plectroctena*. These last two share the same form of alitrunk, node and gaster in the worker and female castes and have the same odd reduction of palpal segments, where the labial palps have more segments than the maxillaries; the most common palp formula in both genera being maxillary 3-, labial 4-segmented. The males are remarkably similar and are separated only by the absence of notauli in *Psalidomyrmex*, but in the workers and females the unique mandibular development and the presence of femoral dorsal grooves in *Plectroctena* quickly separate the genera.

The origins of both *Plectroctena* and *Psalidomyrmex* appear to lie in the genus *Bothroponera* but evidence in support of this assumption is as yet incomplete. It is, however, probably safe to say that their origins differ from those of *Myopias* and *Trapeziopelta*.

Thus the subtribe Plectroctenini is spurious, being merely an assemblage of long-mandibulate forms of tribe Ponerini placed together for the sake of convenience.

SYNONYMY OF *Plectroctena* AND *Cacopone*.

The genus *Cacopone* was founded upon a single specimen by Santschi (1914b) who considered it to be 'between *Psalidomyrmex* and *Myopias*'. Later, in his review of *Plectroctena*, Santschi (1924) stated that this genus was very close to *Cacopone*

and separated the latter on the shape of its mandibles and the fact that 'the articulatory emargination of the anterior angle of the head (is) missing'.

This statement corresponds to the figure of *C. hastifer* given by Santschi in the original description, where no emargination is shown, but flatly contradicts the statement on lines 2-3 of the original description where the clypeus is said to be 'emarginate at the mandibular insertions'.

A specimen in the BMNH collection from Tafo, Ghana (only a short distance from the type-locality of *C. hastifer*) fits the original description perfectly and only fails to match the figure as the articulatory emarginations are well developed. It was concluded that the figure was inaccurate but had been used by Santschi as his reference point for *Cacopone* when working on his review of *Plectroctena*, as the holotype of *hastifer* was at that time no longer in his possession but had been deposited in the IE, Naples along with the rest of the Silvestri material from which it originally came.

Only the specialized shape of the mandibles remained to separate *Cacopone* from *Plectroctena* but this character, weakened by the discovery of a second, *hastifer*-like species with more normal mandibles is insufficient evidence for retaining the genus, and it is consequently relegated to the synonymy of *Plectroctena*.

LIST OF SPECIES

hastifer-group

anops sp. n.

hastifer (Santschi) comb. n.

minor-group

cristata Emery

cristata var. *semileavis* Santschi syn. n.

dentata Santschi

emeryi Santschi syn. n.

gabonensis Santschi

latinodis Santschi

minor Emery

minor var. *insularis* Santschi syn. n.

minor var. *liberiana* Santschi syn. n.

minor var. *perusta* Santschi syn. n.

mandibularis-group

conjugata Santschi

cryptica sp. n.

gestroi Menozzi

laevior Stitz stat. n.

macgeei sp. n.

mandibularis F. Smith

Ponera caffra 'Klug' Spinola (*nomen nudum*)

caffra st. *major* Forel

mandibularis var. *integra* Santschi syn. n.

mandibularis st. *strigosa* var. *strioliventris* Stitz (name not available)

strigosa Emery stat. n.

subterranea Arnold

punctata Santschi syn. n.

ugandensis Menozzi

KEY TO SPECIES

(Based on worker caste)

Note: the worker of *ugandensis* is not known.

- 1 Apical half of each mandibular blade swollen; basal tooth absent (Text-fig. 2). Head relatively narrow, CI < 80. Propodeal laminae continuous around dorsum of declivity 2
- Apical half of each mandibular blade not swollen; basal tooth usually present (Text-fig. 3). Head relatively broad, CI > 85. Propodeal laminae if present confined to lateral portions of declivity, not continuous around the dorsum 3
- 2 Dorsal surfaces of head, alitrunk, petiole and first gastral tergite with numerous erect hairs. Eyes present, minute. Node of petiole relatively long and low in profile, LPI < 75. (Ghana) *hastifer* (p. 320)
- Dorsal surfaces of head, alitrunk, petiole and first gastral tergite without erect hairs. Eyes absent. Node of petiole relatively higher in profile, LPI > 85. (Ghana) *anops* (p. 319)
- 3 First gastral tergite with an anteriorly located transverse groove or impression which may run the width of the tergite or may be reduced to the central one-quarter of the width of the segment 4
- First gastral tergite without a transverse groove or impression anteriorly 8
- 4 Ventral surfaces of the head and usually also the sides of the head, at least below and behind the eyes, with the spaces between punctures finely striate. Funicular segments 3-4 as long as, or longer than broad 5
- Ventral surfaces of the head and sides of head below and behind the eyes with the spaces between punctures smooth and shining. Funicular segments 3-4 broader than long, usually markedly so 6
- 5 Very large species, HL > 4.0, with relatively very long mandibles, MI > 90. Ocular diameter 0.46 or more. (Cameroun, Zaire, Kenya) *cristata* (p. 321)
- Smaller species, HL < 4.0, with relatively shorter mandibles, MI < 90. Ocular diameter 0.46 or less. (Uganda, Zaire, Angola) *dentata* (p. 322)
- 6 Petiole in dorsal view relatively very broad, the node about as broad as long, DPI 100. (Cameroun, Zaire). *latinodis* (p. 323)
- Petiole in dorsal view relatively narrower, the node distinctly longer than broad, DPI < 85 7
- 7 Eyes larger, ocular diameter > 0.30. Full adult colour black. Petiole in dorsal view with a median impression in the posterior margin. (W. & C. Africa) *minor* (p. 324)
- Eyes smaller, ocular diameter < 0.30. Full adult colour deep brown or red-brown. Petiole in dorsal view usually without a median impression in the posterior margin. (Gabon, Equatorial Guinea, Zaire). *gabonensis* (p. 323)
- 8 Head very coarsely sculptured dorsally with large pits or foveolae whose diameters are greater than the distances separating them or which are adjacent. Mesonotum and propodeum with a polished, virtually unsculptured median longitudinal strip. (Liberia, Ivory Coast, Ghana) *cryptica* (p. 327)
- Head punctate dorsally, the punctures small and separated by distances greater than their diameters; punctures never adjacent. Mesonotum and propodeum without a polished, virtually unsculptured median longitudinal strip 9
- 9 Mandibles edentate (Text-fig. 1). Node of petiole relatively long, low and narrow, LPI < 90, DPI < 70. (Nigeria) *macgeei* (p. 330)
- Mandibles at least with a strongly developed basal tooth and usually also with a second, smaller tooth in the apical half (Text-fig. 3). Node of petiole relatively short, high and broad, LPI > 100, DPI > 75 10
- 10 Head and alitrunk in profile with numerous short, erect or suberect hairs projecting from the dorsum. (Principe Is.) *gestroi* (p. 328)

- Head and alitrunk in profile without hairs projecting from the dorsum 11
- 11 Ventral surfaces of head without striation between the punctures. 12
- Ventral surfaces of head with striation between the punctures, at least anteroventrally 13
- 12 Propodeal declivity armed near the base with a pair of stout triangular teeth, dorsal to which the laminae are not developed. Larger species, HL > 3.0. Full adult colour black or black-brown. (Tanzania) *laevior* (p. 329)
- Propodeal declivity not armed with teeth, the laminae running almost the length of the declivity. Smaller species, HL < 2.5. Full adult colour red or orange-brown. (Ivory Coast, Kenya, Malawi, Rhodesia) *subterranea* (p. 333)
- 13 Leading (anterior) margin of antennal scapes with a row of freely projecting, erect, short hairs. (Kenya, Tanzania, South Africa) *strigosa* (p. 332)
- Leading (anterior) margin of antennal scapes without freely projecting short, erect hairs 14
- 14 Funicular segments 3-5 at least as long as broad, usually longer than broad. Larger species, HL > 3.0. (S. & E. Africa, Angola, Zaire) *mandibularis* (p. 330)
- Funicular segments 3-5 broader than long. Smaller species, HL < 3.0. (Rhodesia, South Africa) *conjugata* (p. 326)

PROVISIONAL KEY TO KNOWN FEMALES

Note: in the majority of species very few females are represented in collections; the key below should therefore be used with some caution.

- 1 Alate species. If wings lost then the flight sclerites are fully developed. Ventral surfaces of head with the spaces between punctures smooth and shining 2
- Ergatoid species. Wings absent, never developed; flight sclerites never developed; sutures of dorsal alitrunk usually reduced or absent. Ventral surfaces of head with the spaces between punctures striate. 8
- 2 First gastral tergite with an anteriorly located transverse groove or impression. 3
- First gastral tergite without an anteriorly located transverse groove or impression 5
- 3 Larger, more thickset species, HL > 3.60, pronotal width at maximum > 2.50 4
- Smaller, more slender species, HL < 3.50, pronotal width at maximum < 2.40. (Cameroun, Zaire) *latinodis* (p. 324)
- 4 Full adult colour deep red-brown. Petiole relatively longer and narrower, PL 1.60, DPI < 80. Smaller species, HL < 3.70. (Gabon, Equatorial Guinea, Zaire) *gabonensis* (p. 323)
- Full adult colour black. Petiole relatively shorter and broader, PL < 1.55, DPI > 80. Larger species, HL > 3.70. (W. & C. Africa) *minor* (p. 325)
- 5 Dorsal surfaces of head and alitrunk with numerous short, erect or suberect hairs. (Principe Is.) *gestroi* (p. 329)
- Dorsal surfaces of head and alitrunk without erect or suberect hairs 6
- 6 Dorsum of head with large punctures or foveolae whose diameters are greater than the distances separating them or which are adjacent. Head black. Smaller species, HL < 1.55. (Liberia, Ivory Coast, Ghana) *cryptica* (p. 328)
- Dorsum of head with small, fine, scattered punctures whose diameters are smaller than the distances separating them and which are never adjacent. Head red or red-brown. Larger species, HL > 1.75 7
- 7 Antennal scapes when laid back failing to reach the level of the lateral ocelli. Smaller species with relatively low petiole, HL < 2.0, LPI < 110. (Uganda, Zaire) *ugandensis* (p. 334)
- Antennal scapes when laid back surpassing the level of the lateral ocelli. Larger species with relatively high petiole, HL > 2.0, LPI > 115. (Ivory Coast, Kenya, Malawi, Rhodesia) *subterranea* (p. 333)

- 8 First gastral tergite with an anteriorly located transverse groove or impression.
 Petiole relatively long and narrow, $DPI < 85$ 9
- First gastral tergite without an anteriorly located transverse groove or impression.
 Petiole relatively short and broad, $DPI > 90$ 10
- 9 Large species with large eyes, $HL > 4.55$, ocular diameter > 0.65 . Petiole relatively
 narrow dorsally, $DPI < 70$. (Cameroun, Zaire, Kenya) *cristata* (p. 322)
- Smaller species with small eyes, $HL < 4.55$, ocular diameter < 0.55 . Petiole
 relatively broad dorsally, $DPI > 70$. (Uganda, Zaire, Angola) *dentata* (p. 322)
- 10 Large species with relatively long mandibles, $HL > 4.0$, $SL > 2.90$, $MI > 83$. (S. &
 E. Africa, Angola, Zaire) *mandibularis* (p. 331)
- Smaller species with relatively shorter mandibles, $HL < 4.0$, $SL < 2.80$, $MI < 83$.
 (S. Africa, Rhodesia) *conjugata* (p. 326)

THE *HASTIFER*-GROUP

Basal tooth of mandible absent; apical portion of mandible swollen. Propodeal laminae forming a continuous rim around the sides and dorsum of the declivity. First gastral tergite without an anteriorly situated transverse groove or impression. Head considerably longer than broad, $CI < 80$. Petiole in profile long and low, noticeably longer than high, $LPI < 100$. Eyes minute or absent. Sculpturation of head of coarse punctures or foveolae, the diameters of the individual punctures greater than the distances separating them, or the punctures virtually adjacent.

The two species known in this small group have been found only in the forest zone of eastern Ghana. Both are elongate, relatively slender forms with a red or red-brown colour and with the eyes very small or lacking. In view of these characters a completely subterranean lifeway is postulated for the species.

Plectroctena anops sp. n.

(Text-figs 4, 7)

DIAGNOSIS OF WORKER. Eyes absent. Mandibles without a differentiated basal tooth, the apex swollen. Propodeal laminae strongly developed, continuous around the dorsum and sides of the declivity. First gastral tergite without a transverse groove anteriorly. Dorsum of head with large pits or foveolae whose diameter is greater than the distances separating them.

FURTHER DESCRIPTION. *Holotype worker.* TL 7.4, HL 1.68, HW 1.32, CI 78, ML 1.20, MI 71, SL 0.98, PH 0.72, PL 0.80, LPI 90, DPW 0.56, DPI 70.

Mandibles without a basal tooth. In dorsal view the apical halves of the mandibles swollen, broader than the basal halves; tapering towards the apex. On the inner margin of each mandibular blade, at the point where the mandibles increase in width, is a small, blunt, dentiform prominence. Eyes absent. Posterior margin of head almost straight, only very shallowly concave in full face view. General outline of head as shown in Text-fig. 4. Funicular segments 2-10 distinctly broader than long. Propodeal laminae strongly developed, broad, translucent, meeting dorsally so that the declivity is encircled on both sides and narrowly above. Femoral grooves of middle and hind legs reduced but still visible. Petiole in profile blocky and massive, slightly longer than high; in dorsal view long and narrow, gradually increasing in width from front to back. First gastral tergite rounded anteriorly in dorsal view, its width increasing posteriorly. Second tergite with sides nearly parallel, only very weakly convex and somewhat convergent posteriorly.

Dorsum, sides and ventrolateral surfaces of head densely covered with large punctures or

foveolae which are contiguous or nearly so, their diameters noticeably greater than the distances separating them. Dorsal alitrunk similarly but more shallowly sculptured, the pronotal disc with the punctures more closely approximated than on the sides and similarly with the remainder of the alitrunk. Sides of alitrunk with a few weak striae between punctures. Propodeal declivity smooth and highly polished. Petiole sculptured as alitrunk. First and second gastral tergites and sternites densely covered with punctures or foveolae.

Dorsal surfaces of head, alitrunk and gaster with a diffuse, decumbent pubescence which is directed toward the mid line. Erect hairs present only on mouthparts, legs and apex of gaster.

Full adult colour red-brown.

Holotype worker, GHANA: Tafo, 8.ix.1966, ant ecology sample 249c (*D. Leston*) (BMNH).

This small species is most closely related to *hastifer*, from which it may be separated by its size, lack of eyes and absence of erect hairs from the dorsal surfaces of the head and body.

Plectroctena hastifer (Santschi) comb. n.

(Text-figs 2, 6)

Cacopone hastifer Santschi, 1914b : 325, fig. 11. Holotype worker, GHANA: Aburi (*F. Silvestri*) (IE, Naples).

DIAGNOSIS OF WORKER. Mandibles without a basal tooth, their apices swollen. Dorsal surfaces of head, petiole and first two gastral segments with numerous erect hairs. Anterior and dorsal surfaces of petiole confluent, meeting through a smooth curve, not separated by an angle. Dorsum of head coarsely punctate, the diameter of the punctures greater than the distance separating them. First gastral tergite without an anterior transverse groove. Propodeal laminae meeting dorsally, continuous around the declivity.

FURTHER DESCRIPTION. *Worker*. TL 10.9, HL 2.40, HW 1.84, CI 77, ML 1.68, MI 70, SL 1.48, PH 0.84, PL 1.24, LPI 68, DPW 0.64, DPI 52.

Mandibles edentate, the distal half swollen, considerably broader than the proximal, tapering apically. Head considerably longer than broad, the occipital margin virtually straight, only extremely shallowly concave. Eyes present, depigmented, very small, ocular diameter 0.10–0.12. Funicular segments 3–9 noticeably broader than long. Dorsal groove or thin strip absent from middle, present on hind femora. Propodeal laminae contiguous dorsally, translucent, forming a continuous lamella around the declivity. Node of petiole in profile long and low, the anterior and dorsal surfaces confluent through a continuous shallow curve, not separated by an angle. In dorsal view the first gastral tergite rounded anteriorly.

Sculpture everywhere of large but quite shallow punctures or foveolae whose diameters are equal to or greater than the distances separating them. The spaces between the punctures are smooth and shining except on the sides of the alitrunk and petiole, where striae are present.

Dorsal surfaces of head, alitrunk, petiole and first and second gastral tergites with numerous short, erect hairs. Full adult colouration a deep red.

Most closely related to *anops* but separable from it by the smaller size of that species and its lack of eyes or erect hairs.

MATERIAL EXAMINED.

GHANA: Tafo (*D. Leston*).

THE *MINOR*-GROUP

Basal tooth of mandible present and each blade also with a second, more apically placed tooth which is usually very small, sometimes no more than a faint prominence. Apical portion of mandible not swollen. Propodeal laminae restricted to the sides of the declivity, often very weakly developed. First gastral tergite with an anteriorly placed transverse groove or impression which is often strongly developed but which may be reduced and only clearly visible medially. Head relatively broad, the measured range of CI 89–97. Petiole in profile as high as long or higher than long, LPI 100 or more. Eyes present, usually well developed but small in some species. Dorsum of head sculptured with fine, widely spaced punctures.

This group contains five species, linked by the characters noted above. Within the group the species separate into two complexes, one based upon *minor* itself and including also *gabonensis* and *latinoda*, in which the females are alate and the ventral surfaces of the head are smooth between the punctures, and the second based upon *cristata* and *dentata* in which the females are ergatoid and the ventral surfaces of the head are striate between the punctures.

The distribution of the species of the *minor*-group is mostly restricted to the rain forests of West and Central Africa, but *cristata* and *dentata* have been found in the forests of Kenya and Uganda respectively. Eidmann (1944) reported the presence of *gabonensis* upon the island of Fernando Po in the Gulf of Guinea, the only member of this group to be found off the mainland.

For nesting sites the members of the group appear to prefer the wood of very rotten or collapsed logs and foraging is carried out under the bark and in the wood of such logs as well as under the bark of more recently dead wood.

Plectroctena cristata Emery

Plectroctena cristata Emery, 1899 : 470. Syntype workers, CAMEROUN (*Conradi*) (probably in MCSN, Genoa).

Plectroctena cristata var. *semileavis* Santschi, 1924 : 163. Holotype worker, ZAIRE: Luebo, Kamaiembi 22.ix.1921 (*H. Schouteden*) (MRAC, Tervuren) [examined]. [Variant spelling as *semilaeve* op. cit.: 173.] **Syn. n.**

DIAGNOSIS OF WORKER. Very large species, $HL > 4.0$. First gastral tergite with a strongly marked transverse groove anteriorly. Dorsum of head often with a shallow, broad, transverse impression posteriorly which is interrupted medially. Funicular segments 3–5 longer than broad. Sides of head behind eyes with the spaces between punctures usually finely striate. Ocular diameter 0.48–0.62.

FURTHER DESCRIPTION. *Worker* TL 21.6–23.2, HL 4.40–4.60, HW 4.12–4.32, CI 93–94, ML 4.16–4.36, MI 94–95, SL 3.24–3.48, PH 2.00–2.16, PL 1.92–2.04, LPI 100–106, DPW 1.32–1.36, DPI 67–69 (5 measured).

Sides of head expanded and convex in front of the eyes. Palp formula 3, 4. Dorsal surface of head posteriorly usually with a shallow or very shallow, broad transverse impression which is interrupted medially. In some specimens this character is faint or absent. Funicular segments 3–9 at least as long as broad, usually longer than broad. Pronotal dorsum usually without, very rarely with a median longitudinal impression posteriorly. When present this character is extremely faint. Outline shape of propodeal laminae in profile variable but usually with a rounded prominence about half way down the declivity which in some may be bluntly dentiform. Anterior transverse groove of first gastral tergite strongly developed, clearly visible in profile and running almost or quite the anterior width in dorsal view.

Dorsum of head with scattered fine punctures, the interspaces shining mediodorsally and

usually striate laterodorsally, but in some individuals striae are present over the entire surface. Sides of head usually, and ventral surface always, striate between the punctures. Dorsal alitrunk and first two gastral tergites usually with the interpunctural spaces smooth and shiny, more rarely with the spaces shagreened or finely striate. Lateral portions of the first tergite often striate between punctures, as are the lateral portions of the first sternite. Full adult colour black.

Female. TL 24.2, HL 4.64, HW 4.52, CI 99, ML 4.40, MI 95, SL 3.40, PH 2.16, PL 2.04, LPI 106, DPW 1.40, DPI 68.

Ergatoid. Slightly larger than the largest worker measured; ocular diameter 0.72. Ocelli present, the median more strongly developed than the laterals. Metanotal groove present. Mesoscutellum delineated upon the dorsal alitrunk. Sculpturation of head fainter and less well defined than in worker. Otherwise as worker.

This very large species is most closely related to *dentata* but is separable by the characters given in the keys.

MATERIAL EXAMINED.

CAMEROUN: no loc. (ex coll. Santschi); Ntsama (*B. de Miré*). ZAIRE: Ubangi, Binga (*H. J. Bredo*); Niapu (*H. O. Lang*). KENYA: Kibale Forest (*A. Loveridge*).

Plectroctena dentata Santschi

Plectroctena minor var. *dentata* Santschi, 1912 : 150. Syntype workers, ANGOLA: Benguela, Cucala (*J. Cruchet*) (NM, Basle; MRAC, Tervuren) [examined].

Plectroctena dentata Santschi, 1924 : 164 fig. 1c. [Raised to species.]

Plectroctena emeryi Santschi, 1924 : 164. Holotype female (ergatoid; not worker), CONGO (*J. de Gaule*) (NM, Basle) [examined]. **Syn. n.**

DIAGNOSIS OF WORKER. First gastral tergite with a weakly developed transverse groove anteriorly. Funicular segments 3-5 about as broad as long. Ocular diameter 0.42-0.46. Ventrolateral and ventral surfaces of head with striae between the punctures.

FURTHER DESCRIPTION. *Worker.* TL 12.8-17.7, HL 3.20-3.52, HW 2.96-3.28, CI 92-94, ML 2.34-3.00, MI 75-85, SL 2.08-2.36, PH 1.36-1.52, PL 1.28-1.48, LPI 103-106, DPW 0.96-1.08, DPI 71-75 (5 measured).

Sides of head in front of eye very slightly or not expanded, forming a more or less continuous line with the remainder of the sides. Eyes of moderate size, ocular diameter 0.42-0.46. Funicular segments 3-5 about as broad as long but distal to this becoming noticeably broader, segments 7-9 obviously broader than long. Pronotal dorsum without a median longitudinal impression (but as this character is commonly developed in species of this group specimens will probably be found in which it does occur). Propodeal laminae in profile usually starting a short distance down the declivity and expanded at this point into a bluntly dentiform prominence, variable in shape and size even in members of the same nest-series. Transverse impression of first gastral tergite usually faint and poorly developed, only visible in the middle of the tergite, often scarcely discernible in profile.

Dorsum of head with fine, scattered punctures, the interspaces smooth and shining. Below the eye (and more rarely also behind it) and the ventral surfaces of the head with fine striae between the punctures. Dorsal alitrunk and first and second gastral segments smooth and shining between the punctures. Occasionally a few faint striae may be present on the propodeal dorsum.

Female. TL 22.6-23.2, HL 4.20-4.28, HW 4.08-4.12, CI 95-98, ML 3.76-3.90, MI 88-93, SL 3.08-3.12, PH 1.92-2.00, PL 1.84-1.88, LPI 104-106, DPW 1.36-1.40, DPI 72-76 (2 measured).

Ergatoid. Ocular diameter 0.48–0.50. Ocelli present or head with a pair of distinct pits marking the vestiges of the lateral ocelli. Metanotal groove present but poorly defined. Propodeal laminae not dentiform but with an angular portion at about the midlength. Groove on the first gastral tergite more strongly developed than in the worker; the striate sculpturation of the ventral surface of the head less strongly developed. Otherwise as worker.

MATERIAL EXAMINED.

UGANDA: Busia (*E. S. Ross & R. E. Leech*). ZAIRE: Kisenje (?).

Plectroctena gabonensis Santschi

Plectroctena gabonensis Santschi, 1919a : 336. Syntype workers, GABON: Libreville, 1.xii.1897 (*Chalot*), and GABON: Samkita 1914 (*F. Faure*) (NM, Basle) [examined].

Note: Santschi described this species twice as new; first as above and later the same year as *subterranea* st. *gabonensis* Santschi, 1919b : 90. Both descriptions were based upon the same specimens.

DIAGNOSIS OF WORKER. As *minor* but first gastral tergite with the transverse groove very weak, usually only plainly visible in the middle of the sclerite. Petiole in dorsal view without a median impression in the posterior margin. Eyes small, ocular diameter 0.22–0.26.

FURTHER DESCRIPTION. *Worker*. TL 12.8–14.0, HL 2.60–2.92, HW 2.32–2.68, CI 89–95, ML 2.20–2.56, MI 85–92, SL 1.60–1.92, PH 1.08–1.36, PL 1.04–1.24, LPI 100–109, DPW 0.76–0.92, DPI 73–75 (8 measured).

As *minor* but averaging slightly smaller than that species. The eyes are noticeably smaller, with a maximum ocular diameter of 0.26 (compared to a minimum ocular diameter of 0.32 in *minor*). Propodeal laminae very poorly developed, scarcely more than a pair of weak ridges, not projecting as bluntly dentiform prominences. In dorsal view the posterior margin of the node usually lacks a median impression. The transverse groove on the first gastral tergite is very weak indeed; in some specimens only a faint impression in the middle of the sclerite is visible and this impression is only poorly defined in profile. Full adult colour is deep red-brown, as opposed to black or black-brown in *minor*.

Female. A fully alate queen in MCZ, Cambridge is suspected as the female of this species. It resembles the worker but is larger, with fully developed flight sclerites and ocelli. Its dimensions are TL 19.6, HL 3.68, HW 3.48, CI 94, ML 3.04, MI 83, SL 2.60, PH 1.64, PL 1.60, LPI 103, DPW 1.20, DPI 75.

MATERIAL EXAMINED.

GABON: no loc. (ex coll. F. Smith). EQUATORIAL GUINEA: Fernando Po (*Conradt*). ZAIRE: Tshela (*E. S. Ross & R. E. Leech*); Eala (*J. Ghesquière*); Uele, Buta (*R. F. Hutsebaut*); Equateur, Bokuma (*R. P. Hulstaert*).

Plectroctena latinodis Santschi

Plectroctena latinodis Santschi, 1924 : 165, fig. 2a. Syntype worker, female, ZAIRE: Congo da Lemba (*R. Mayné*) (MRAC, Tervuren, NM, Basle) [examined].

DIAGNOSIS OF WORKER. As *minor* but the petiole relatively higher, LPI 115, and considerably broader, DPI 100. Transverse groove on first gastral tergite developed only in the middle of the sclerite and situated at the extreme anterior margin.

FURTHER DESCRIPTION. *Worker.* TL 15·6, HL 3·16, HW 2·92, CI 92, ML 2·72, MI 86, SL 2·08, PH 1·20, PL 1·04, LPI 115, DPW 1·04, DPI 100.

As *minor*, but *latinodis* is slightly smaller and its ocular diameter is at the bottom of the size range seen in *minor* workers (0·32). Propodeal laminae very poorly developed, scarcely more than a pair of weakly raised ridges. Transverse groove of first gastral tergite strongly developed in the median portion of the sclerite only, and is very close to the anterior border of the tergite. The shape of the petiole node is immediately diagnostic of the species. In profile it is high and narrow, lacking the impression or discontinuity of outline in the anterodorsal margin which is seen in *minor* and usually also in other related species. In dorsal view the node is blocky and broad, with a DPI in the syntype worker of 100, compared to the maximum recorded DPI of 76 in workers of other species of the group.

Female. TL 18·0–18·2, HL 3·28–3·40, HW 3·04–3·12, CI 91–93, ML 2·68–2·72, MI 79–83, SL 2·12–2·24, PH 1·48–1·52, PL 1·40–1·44, LPI 104–109, DPW 1·12–1·16, DPI 78–83 (2 measured).

Alate, the alitrunk with developed flight sclerites. Ocelli present, the median and laterals of approximately equal size. Ocular diameter 0·56–0·58. Petiole not nearly so high and broad as in worker. Otherwise as worker.

The female approximates much more closely to *minor* and *gabonensis* than the worker but is smaller and more slenderly built. The maximum width of the pronotum in specimens measured has a range 2·20–2·32 as opposed to a minimum pronotal width of 2·64 in the other two species.

MATERIAL EXAMINED.

CAMEROUN: Mundame (*Conradt*).

Plectroctena minor Emery

(Text-figs 3, 9)

Plectroctena minor Emery, 1891 : 556, pl. 15, figs 1, 2. Holotype female, IVORY COAST: Assinie, vii–viii. 1886 (*Ch. Alluaud*) (probably in MCSN, Genoa).

Plectroctena minor var. *perusta* Santschi, 1924 : 168, fig. 2b. Syntype workers, CAMEROUN: Barumbistation (*Preuss*) (NM, Basle) [examined]. **Syn. n.**

Plectroctena minor var. *liberiana* Santschi, 1924 : 169, fig. 2c. Holotype worker, LIBERIA (NM, Basle) [examined]. **Syn. n.**

Plectroctena minor var. *insularis* Santschi, 1924 : 169, fig. 3a. Holotype worker, EQUATORIAL GUINEA: Fernando Po (*Conradt*) (probably in MCSN, Genoa). **Syn. n.**

DIAGNOSIS OF WORKER. First gastral tergite with a strongly marked transverse groove anteriorly. Sides of head behind and below eyes without striae between the punctures. Petiole in dorsal view usually with a weak median impression in the posterior margin. Ocular diameter 0·32–0·36. Funicular segments 3–5 broader than long. LPI < 115, DPI < 90.

FURTHER DESCRIPTION. *Worker.* TL 15·2–17·6, HL 3·32–3·60, HW 3·12–3·33, CI 89–97, ML 2·84–3·28, MI 85–88, SL 2·32–2·48, PH 1·36–1·48, PL 1·24–1·40, LPI 100–112, DPW 0·92–1·00, DPI 69–76 (10 measured).

Sides of head in front of eyes somewhat expanded, the outer margins convex. Palp formula 3, 4. Eyes of moderate size, measured range of ocular diameter 0·32–0·36. Funicular segments 3–10 noticeably broader than long. Pronotum with or without a median longitudinal impression. In some populations this character is distinct, in others faint, but very often absent. Propodeal laminae usually only weakly developed, most commonly with a low, dentiform prominence or angle at about one-third the distance down the declivity. Node of petiole in profile often with

a slight impression or discontinuity of outline in the anterodorsal surface; and in dorsal view with a slight impression in the middle of the posterior margin. Transverse groove on first gastral tergite strongly developed, clearly visible both in dorsal view and in profile.

Dorsum, sides and ventral surfaces of head with fine scattered punctures, the spaces between which are smooth and shining, not striate. Dorsum of alitrunk and first and second gastral tergites and sternites with similar sculpture. Full adult colour black or black-brown.

Female. TL 19·2–21·4, HL 3·72–3·84, HW 3·28–3·60, CI 88–94, ML 3·12–3·20, MI 82–83, SL 2·48–2·64, PH 1·64–1·76, PL 1·46–1·48, LPI 110–119, DPW 1·20–1·24, DPI 81–84 (3 measured).

Alate, flight sclerites developed. Eyes larger, ocular diameter 0·62–0·68. Ocelli present. Otherwise as worker.

This species is not uncommon in eastern Ghana and western Nigeria and is usually found in quite dense forest or woodland in which there is an abundance of fallen and rotting wood. The majority of collections of this species made by the author were in or under rotten logs, a preference apparently being shown for logs which still retained some bark in a loose condition. Nests on the other hand appear primarily to be built in extremely rotten or collapsed logs and on one occasion a single dealate female was found in a portion of fallen and rotting carton nest of a *Crematogaster* species. Fragments of millepedes were found amongst the detritus of a nest excavated at Gambari, Nigeria, indicating that diplopods make up at least a part of the diet of *minor*.

MATERIAL EXAMINED.

SIERRA LEONE: no loc. (ex coll. F. Smith). GHANA: Tafo (*B. Bolton*). NIGERIA: Gambari (*B. Bolton*). ZAIRE: Tonolu (*H. Schouteden*); Stanleyville (*H. Kohl*); Pweto (*E. S. Ross & R. E. Leech*).

THE *MANDIBULARIS*-GROUP

Basal tooth of mandible usually strongly developed (absent in *macgeei*), the apical portion of the mandible not swollen. Propodeal laminae restricted to sides of declivity, often weakly developed. First gastral tergite without a transverse groove or impression anteriorly. Head relatively broad, measured range of CI 86–95. Petiole in profile as high as or higher than long (LPI 100 or more) except in *macgeei* (LPI 89). Eyes present, usually well developed but small in some species. Sculpture variable amongst members of the group.

This group of nine species separates into two complexes and a solitary, rather aberrant species which in many respects differs from all the others included. The first complex includes *mandibularis*, *conjugata*, *strigosa*, *laevior* and *gestroi* which are large, black species, and the second includes *subterranea*, *ugandensis* and *cryptica* which are smaller, red or red-brown species.

The anomalous *macgeei* stands out sharply from this assemblage as it is small (about the same size as the larger *subterranea* specimens) but black in colour, and possesses edentate mandibular blades and a relatively long, low and narrow petiole node.

The most widely distributed species of the group, and also of the genus as a whole, is *mandibularis*, which is known throughout southern and eastern Africa (reaching as far north as Ethiopia) and which also occurs in parts of Zaire and Angola.

Compared with this the known ranges of the other species are small indeed. *Conjugata* is known from South Africa and Rhodesia, *laevior* from Tanzania, *ugandensis* from Uganda and Zaire, and *cryptica* from a number of West African countries. Of the remaining species, *macgeei* and *gestroi* have been recorded by their type-localities only, namely Nigeria and Principe Island.

The known range of *subterranea*, from Malawi, Rhodesia and the savannah of Ivory Coast, suggests that this species is present throughout much of the savannah regions of Africa, but as its habits are probably wholly subterranean it will be a long time before its true distribution can be ascertained.

Nesting sites of the representatives of this group are terrestrial in most species, the nests being built in the earth either directly or under a stone or log.

Plectroctena conjugata Santschi

Plectroctena minor st. *conjugata* Santschi, 1914a : 8. Syntype workers, female, SOUTH AFRICA: Natal, Stamford Hill, Charlestown 30.iv.1905, and Zululand (*I. Trägårdh*) (MCZ, Cambridge; MRAC, Tervuren; NM, Basle) [examined].

Plectroctena conjugata Santschi; Santschi, 1924 : 166. [Raised to species.]

DIAGNOSIS OF WORKER. As *mandibularis* but smaller, HL < 3.00; ocular diameter 0.32–0.38. Funicular segments 3–5 broader than long.

FURTHER DESCRIPTION. *Worker.* TL 11.8–14.6, HL 2.68–2.96, HW 2.48–2.72, CI 89–92, ML 2.16–2.44, MI 80–83, SL 1.88–2.04, PH 1.24–1.48, PL 1.04–1.28, LPI 109–119, DPW 0.96–1.12, DPI 80–92 (10 measured).

As *mandibularis* but averaging smaller in size and with somewhat smaller eyes. Funicular segments 3–5 usually noticeably broader than long but in some specimens only slightly so. Palp formula 3, 4. Striae on the ventral surfaces of the head less strongly developed than is usual in *mandibularis*, commonly restricted to the anterior half or one-third of the ventrolateral surfaces. A median longitudinal groove is often present on the pronotum but specimens in which it is weakly developed or absent are frequently found. Sculpturation in the species is subject to the same variation as is noted in *mandibularis* but forms with either the dorsal head or dorsal gaster striate are not known, nor are individuals showing a predominantly striate sculpture everywhere.

Female. TL 17.6–19.4, HL 3.20–3.80, HW 3.08–3.56, CI 93–96, ML 2.60–3.00, MI 79–81, SL 2.28–2.60, PH 1.48–1.84, PL 1.36–1.60, LPI 109–115, DPW 1.32–1.52, DPI 95–97 (3 measured).

Ergatoid; sutures of alitrunk reduced, developed flight sclerites lacking. Larger and more stockily built than the worker, with larger eyes, ocular diameter 0.48–0.60. Ocelli absent in specimens examined but ocellar vestiges in the form of a pair of strong pits are present on the head at the site of the lateral ocelli. Petiole relatively shorter and broader than in the worker. Otherwise as worker.

On characters shown by the worker alone, *conjugata* is not easily separated from *mandibularis* and I am not convinced that the two actually represent distinct species. Santschi (1924) separated them in his key on the character of relative length and thickness of the funicular segments, on the grounds that in *conjugata* these segments were broader than long whilst in *mandibularis* they were longer than broad. In both the collections of BMNH and MCZ, Boston, however, are specimens of *mandibularis* in which the funicular segments are only just as long as

broad and it is not difficult to envisage all the known forms as being expressions of the same species.

Turning to the female one apparently has a number of mensurable characters which separate the two quite well (see key to females) but as so few specimens are available such differences may prove to be illusory when the queen castes are better known.

The male of *conjugata* is known (Santschi, 1924) and shows a striking difference from that of *mandibularis* in that the gaster of the former is black whilst that of the latter is red or orange-brown. Numerous collections of the male of *mandibularis* have been made and all have the contrasting gastral colour. Unfortunately only three collections of *conjugata* male are known and so the usefulness of this character cannot be estimated at present.

Obviously then, the question of whether *conjugata* is a distinct species cannot be settled satisfactorily at present, and a decision must await the amassing of more specimens of all three castes.

Dr W. L. Brown Jr informs me that the food of *conjugata* in South Africa consists of millepedes, and that their rubbish heaps contain many cleaned out ring-segments of these arthropods.

MATERIAL EXAMINED.

RHODESIA: Umtali, Cecil Kop (*W. L. Brown*); Vumba Mts. (*G. Arnold*). SOUTH AFRICA: Grahamstown, Howisons Poort (*W. L. Brown*); W. Grahamstown (*W. L. Brown*); Grahamstown (*F. Jacot-Guillarmod*); Grahamstown (*J. Hewitt*); Port Elizabeth (*H. Brauns*); Gomodimo (*Vernay-Lang*); Natal (ex coll. Santschi); Natal, Isipingo (*H. B. Marley*); Natal, Sydenham (*H. B. Marley*).

Plectroctena cryptica sp. n.

(Text-fig. 5)

DIAGNOSIS OF WORKER. Head coarsely punctate, the diameter of the punctures greater than the distance separating them. Dorsal alitrunk with similar but more widely spaced and fainter punctures, the mesonotum and propodeum with a narrow, polished, virtually unsculptured median strip. First gastral tergite without a transverse anterior groove. Sparse, decumbent pubescence on head pointing towards the midline.

FURTHER DESCRIPTION. *Holotype worker*. TL 6.9, HL 1.40, HW 1.20, CI 86, ML 1.00, MI 71, SL 0.84, PH 0.72, PL 0.64, LPI 112, DPW 0.60, DPI 94.

Mandibles with dentition very reduced. Basal tooth reduced to an angle, best seen in dorso-lateral view, the remainder of the mandible edentate. Eyes minute, ocular diameter about 0.08. Occipital margin of head virtually straight in full-face view, only extremely weakly concave. Funicular segments 2-9 distinctly broader than long. Propodeal laminae strongly developed, extending the length of the declivity, not produced into dentiform prominences. Petiole in profile blocky, higher than long, the dorsal surface shallowly convex. Anterior face of petiole in profile sloping, virtually straight, the posterior face shallowly convex. In dorsal view the petiole is narrowest in front and strongly broadened behind, the posterior border shallowly concave. First gastral tergite without a transverse groove anteriorly.

Dorsum, sides and ventral surfaces of head coarsely and closely punctured, the diameter of the punctures as great as or greater than the distances separating them. Dorsum of alitrunk

with similar but more widely spaced and shallower punctures and with an unsculptured, shining median strip running the length of the mesonotum and propodeum. Rest of body punctate, the spaces between punctures smooth and shining except on the sides of the alitrunk and petiole where striae are present. Striae strongest on metapleuron and sides of propodeum, where the punctures are almost effaced.

Erect hairs present only on mouthparts and gastral apex but a scattered decumbent pubescence is present on head, alitrunk and gaster, pointing towards the mid line on the head. Full adult colour deep red-brown.

Paratypes as holotype but smaller, size range TL 5.7–6.1, HL 1.14–1.24, HW 0.96–1.04, CI 84–85, ML 0.74–0.86, MI 65–69, SL 0.64–0.68, PH 0.62–0.68, PL 0.54–0.58, LPI 115–117, DPW 0.48–0.56, DPI 88–96 (3 measured).

The mandibles show the development of a minute, weak, angular tooth in the apical half of their length, absent from the holotype, and also have a few weak punctures at the posterior end of the polished median strip of cuticle on the propodeum. Ocular diameter shows a range of 0.06–0.08.

Holotype worker, GHANA: Tafo, 2.i.1969, on mud below dam (*B. Bolton*) (BMNH).

Paratypes. 3 workers, IVORY COAST: Lamto (Toumodi), 11.iv.1968 (sample AA 279 N2), 20.vi.1968 (sample AA 334 N4), and 21.ii.1969 (*J. Lévieux*) (BMNH; MCZ, Cambridge).

The holotype worker was found walking on a patch of muddy soil on the bank of the overflow stream of the dam at Tafo. The embankment of the stream immediately above the spot was in process of being excavated and it is assumed that this ant originated in the soil of the embankment.

This small species, the smallest known in the genus at present, is easily recognisable by its size and by the characters given in the diagnosis. The most closely related species appears to be *subterranea* as the form of the petiole node is similar in the two.

Putative female. TL 7.8, HL 1.46, HW 1.32, CI 90, ML 1.02, MI 70, SL 0.88, PH 0.76, PL 0.70, LPI 108, DPW 0.64, DPI 91.

Alate, flight sclerites fully developed. Eyes large for so small a species, ocular diameter 0.32. Ocelli present. Occipital margin broadly concave. Propodeal laminae narrow, alitrunk without a polished, unsculptured median strip. Head black, the remainder of the body brown or brown-black, with areas of differing colour upon the alitrunk. Otherwise as worker.

I have tentatively associated this female from Monrovia, Liberia (in MCZ, Cambridge) with the workers of *cryptica*. The two are very similar and only the minor differences given above separate them. Most of these differences are due to caste, and perhaps the variation in colour and sculpturation can also be attributed to this cause.

Plectroctena gestroi Menozzi

Plectroctena gestroi Menozzi, 1922 : 348, fig. 1. Syntype workers, female, PRINCIPE Is.: Roca Infante Don Enrique, iii. 1900 (*L. Fea*) (IE, Bologna; MCZ, Cambridge) [examined]. (Syntype worker from MCZ, Cambridge lacks head).

DIAGNOSIS OF WORKER. Dorsal surfaces of head, alitrunk, petiole and first gastral tergite with numerous short, erect or suberect hairs.

FURTHER DESCRIPTION. Worker. TL 14.5, HL 3.00, HW 2.84, CI 94, ML 2.56, MI 85, SL 2.40, PH 1.36–1.48, PL 1.24, LPI 110–119, DPW 1.00, DPI 80–81 (2 measured).

Basal tooth of mandible strongly developed. Eyes small, ocular diameter 0.32. Funicular segments 3-6 broader than long. Resembling *conjugata* but differing from that species by the presence of numerous short, erect or suberect hairs on the dorsal and lateral surfaces of the head and body. The middle and hind femora of *gestroi* have a number of projecting hairs ventrally, most conspicuous basally, which contrast to the short, reclinate hairs seen in this position in *conjugata*. Punctures of the cephalic dorsum are coarser and somewhat more closely spaced than in *conjugata* and the ventral surface of the head lacks striation between the punctures.

Female. TL 16.2, HL 3.20, HW 3.12, CI 97, ML 2.72, MI 85, SL 2.24, PH 1.52, PL 1.36, LPI 112, DPW 1.16, DPI 85.

As worker but alitrunk with full complement of flight sclerites. Ocelli present; ocular diameter 0.58. Dorsum of head coarsely and irregularly punctate. Punctures of the ventral surfaces of the head with the interspaces smooth and shining. Gastral tergites finely and densely punctate, the sternites rather more coarsely so, with smooth, shining interspaces. Hairs of head, alitrunk and gaster relatively shorter and more reclinate than in worker. Sides of head in full-face view with numerous hairs projecting freely beyond the margins, directed anteriorly. Projecting hairs on the ventral surfaces of the femora longer and more strongly developed than in the worker.

This easily identifiable species is at present the only member of the genus recorded from Principe Is. As far as can be ascertained it is not yet known from the mainland, though I suspect that it will eventually be found in Central Africa.

Plectroctena laevior Stitz stat. n.

Plectroctena mandibularis st. *laevior* Stitz, in Santschi, 1924 : 163, fig. 1d. Holotype worker, TANZANIA: Kiwugebiet (*Kadt*) (MNHU, Berlin) [examined].

DIAGNOSIS OF WORKER. Propodeal declivity armed with a pair of stout triangular teeth near the base. Median portion of declivity below level of teeth transversely convex. Ventral surfaces of head without striae. First gastral tergite without a transverse groove anteriorly.

FURTHER DESCRIPTION. Worker. TL 18.3, HL 3.68, HW 3.44, CI 93, ML 3.28, MI 89, SL 2.56, PH 1.76, PL 1.56, LPI 113, DPW 1.36, DPI 87.

Basal tooth of mandible strongly developed, the more distal merely a low, rounded swelling. Ocular diameter 0.44. Funicular segments 3-5 about as broad as long. Sides of head only weakly expanded in front of eye, the occipital margin strongly concave medially. Propodeal declivity armed near the base with a pair of broad, triangular teeth, situated above the strongly developed metapleural lobes. Dorsal to the teeth the propodeal laminae are not developed and only a weak margination separates the declivity from the sides. The basal portion of the declivity between the level of the spines and the metapleural lobes is transversely convex and swollen medially and this swollen portion is flanked by a pair of large, deep pits which are almost circular. In other related species these pits are reduced or absent or are situated in each side of a transverse groove at the base of the declivity. Dorsal outline of petiole in profile with a continuous convexity, without an anterior interruption in the outline.

Dorsum of head with fine, scattered, small punctures, the interspaces smooth and shining. Ventral surfaces of head similarly sculptured, as are the dorsal surfaces of the alitrunk, petiole and gaster. On the sides of the alitrunk striation is present, weakest on the pronotum, strongest on the metapleuron. First gastral tergite for the most part smooth between the punctures, but in places with a few weak, scratch-like striae.

This species is related to *mandibularis* and *conjugata* but is immediately separable from them by the unique structure of the propodeal declivity and the absence of striae on the ventral surfaces of the head. It is apparently known only from the type-collection consisting of a single specimen.

***Plectroctena macgeei* sp. n.**

(Text-figs 1, 8)

DIAGNOSIS OF WORKER. Mandibles edentate. First gastral tergite without a transverse groove anteriorly. Ventral surface of head without striae. Node of petiole relatively long and low, LPI < 100.

FURTHER DESCRIPTION. *Holotype worker*. TL 10.8, HL 2.24, HW 2.00, CI 89, ML 1.84, MI 82, SL 1.44, PH 0.92, PL 1.04, LPI 89, DPW 0.64, DPI 67.

Internal margins of mandibles without teeth. Eyes of moderate size, ocular diameter 0.24. Funicular segments 3–9 distinctly broader than long. Propodeal laminae developed on basal half of declivity, relatively broad, broadest dorsally where they are bluntly rounded. Node of petiole in profile relatively long and low, its dorsal surface a shallow, uninterrupted convexity. In dorsal view the node long and narrow, broadening posteriorly; the posterior margin with a median impression. First gastral tergite without a transverse groove anteriorly.

All surfaces of body with numerous small, scattered punctures whose diameters are smaller than the distances separating them. The spaces between punctures smooth and shining except on the sides of the alitrunk and petiole where striae are present in the interspaces. Hairs absent except on mouthparts and gastral apex, and on the legs where they are mostly spiniform. Adult colour black with legs and antennal scapes deep red-brown.

Holotype worker, NIGERIA: Gambari (Western State), 28.x.1969, amongst termites under log (*B. Bolton*) (BMNH).

This small species can immediately be distinguished from related forms by the combination of characters noted above in the diagnosis.

The worker captured (holotype) was walking along a U-shaped sunken path in the soil immediately below a wet-rotten, termite infested log. The nest could not be found.

***Plectroctena mandibularis* F. Smith**

Plectroctena mandibularis F. Smith, 1858 : 101, pl. 7, figs 1–5. Syntype female (ergatoid), male, SOUTH AFRICA: Natal, Durban (= Port Natal) (*Gueinzus*) (BMNH) [examined].

Ponera caffra Spinola, 1853 : 70 (attributed to Klug). [*Nomen nudum*. Synonymy by Roger, 1861 : 41.]

Plectroctena caffra st. *major* Forel, 1894 : 74. Holotype female (ergatoid; not worker), MOZAMBIQUE: Delagoa (*P. Berthoud*). [Synonymy by Emery, 1899 : 469.]

Plectroctena mandibularis var. *integra* Santschi, 1924 : 161. Syntype worker, KENYA: Nairobi, Wa Kikongo et Masai, 1904 (*Ch. Alluaud*); and syntype male, KENYA: Bura, Wa Taita, 1904 (*Ch. Alluaud*) (NM, Basle) [examined]. **Syn. n.**

Plectroctena mandibularis st. *strigosa* var. *striativentris* Stitz, in Santschi, 1924 : 162, fig. 1b. Holotype worker, MALAWI: Lake Tanganyika (*Reichard*) (MNHU, Berlin) [examined]. [Name not available. Variant spellings are *strativentris* and *striativentris*, loc. cit.]

Note on *mandibularis* types. In the original description of the species Smith gave the types as a worker and a male, but later stated that the worker was not known and that the sexes were 'taken in coitu by Herr Gueinzus', thus implying that the types were a female and a male. Emery (1899 : 469) pointed out this contradiction and said that in his opinion the type under discussion was a worker as it did not appear to have ocelli. However, an examination of the type shows a pair of impressions to be present at the sites of the lateral ocelli and it is concluded that this specimen is in fact an ergatoid female.

DIAGNOSIS OF WORKER. Funicular segments 3-5 at least as long as broad, usually distinctly longer than broad. Ocular diameter 0.38-0.52. First gastral tergite without a transverse groove anteriorly. At least the ventral surface of the head with striae between the punctures; striation often present elsewhere on the head and body. Large species, $HL > 3.0$.

FURTHER DESCRIPTION. *Worker.* TL 15.5-24.1, HL 3.12-4.64, HW 2.88-4.28, CI 89-96, ML 2.48-4.12, MI 79-93, SL 2.16-3.40, PH 1.44-2.24, PL 1.28-2.04, LPI 102-120, DPW 1.68-1.76, DPI 80-90 (25 measured).

Basal tooth of mandible strongly developed. Palp formula 3, 4. Eyes large, ocular diameter 0.38-0.52. Funiculus with the second segment longer than broad, segments 3-5 usually longer than broad but quite commonly about as long as broad. Erect hairs absent from leading edge of scape. Propodeal laminae narrow or merely a pair of low ridges, never produced into teeth or spines. Pronotum often with a median longitudinal impression; in some specimens this is very weakly developed but only rarely completely absent. Petiole in profile commonly with a slight concavity or discontinuity of outline anteriorly on the dorsal surface. First gastral tergite without an anteriorly situated transverse groove or impression.

Sculpture very variable. Ventral surfaces of head and sides of alitrunk always with striae; striation usually also present upon the first and second gastral sternites. Head usually smooth and shining with scattered punctures dorsally but specimens are known in which the sides or the sides and dorsum are striate. Linking forms include individuals with the sides strongly, the dorsum weakly striate, and forms in which the median portion of the dorsum is smooth but the remainder striate. In a single specimen from Zambia only the anterior half of the dorsal head has striae. Dorsal alitrunk usually with striation, at least in part; forms with non-striate alitrunk are rare but are known from Natal. Dorsum of first and second gastral tergites range from smooth with scattered punctures to completely striate. Individuals are known in which the striation is very weak or is present on only one tergite or only on part of the tergite, and direction of gastral striation is subject to considerable variation in direction.

Female. TL 23.6-26.2, HL 4.20-4.68, HW 4.20-4.60, CI 98-100, ML 3.68-4.36, MI 87-93, SL 3.00-3.56, PH 2.20-2.36, PL 1.88-2.08, LPI 113-120, DPW 1.92-2.04, DPI 98-102 (5 measured).

Ergatoid, flight sclerites lacking but in some individuals vestiges of suture lines are visible in places. Very similar to largest workers but eyes larger, ocular diameter 0.64-0.72, and usually lateral ocellar vestiges are present in the form of a pair of pits, which are distinctly larger and deeper than the sculptural pits.

This species is the most commonly collected member of the genus and is also one of the most variable as regards sculpturation. It has a very wide range, being known from countries of southern and eastern Africa from the Cape to Ethiopia, and occurs also in Angola and Zaire. It is very closely related to *conjugata* and a discussion of its separation is given under that species.

Arnold (1915) described the nests as follows 'The entrances to the nests are generally indicated by large heaps of earth. The chambers are placed deep below the surface, seldom less than two feet, and the number of individuals seldom exceeds 50.' He adds that the food of the species consists chiefly of millepedes and beetles but also includes termites.

MATERIAL EXAMINED.

ETHIOPIA: Higo Samula (*R. J. Stordy*); Maraquo (*O. Kovacs*). UGANDA: Ansonga (*H. Johnston*). KENYA: Mombasa (*Fernique*); Riv. Tchania (*Alluaud & Jeannel*); Diani Beach (*F. X. Williams*); nr Mombasa (*F. X. Williams*); Kisumi (?). TANZANIA: Usangu distr. (*S. A. Neave*); Zanzibar (*C. Cooke*). MALAWI: Lingadzi (*W. A.*

Lamborn); no loc. (*R. C. Wood*). ZAMBIA: Broken Hill (*Silverlock*). RHODESIA: Bulawayo (*G. Arnold*); Salisbury (*G. A. K. Marshall*); Lonely Mines (*H. Swale*); Matabeleland (*J. S. Jameson*); Wankie Nat. Park (*W. L. Brown*); Bulawayo (*W. S. Brooks*); Pretoria, Magalieskraal (*Lingnau*). BOTSWANA: Ghanzi (*J. Maurice*). MOZAMBIQUE: Gaza (*D. Odendaal*); Vallée du Revoue d'Anorada (*G. Vasse*). SOUTH AFRICA: Transvaal, Zoutpansberg (*J. P. Cregoe*); Transvaal, Shiluvane (*Junod*); Gomodimo (*Vernay-Lang*); Orange Riv. (*G. B. Hamilton*); Natal (ex coll. *F. Smith*); Natal, Estcourt (*E. J. Turner*); Natal (*Wroughton*); Pondoland, Port St. John (*R. E. Turner*); Pt. Elizabeth (?); Willowmore (*H. Brauns*); Cape Prov., Somerset East (*R. E. Turner*); Pretoria (*Von Sassighim*); Algoa Bay (*H. Brauns*); Zululand (*I. Trägårdh*). ANGOLA: Bruco (*P. M. Hammond*). ZAIRE: Katanga (*Lemaire*); Katanga, Vallée de la Lubumbashi (*Buttgenbach*); Kapiri (*L. Charliers*); Vallée Lukuga (*Schwetz*); no loc. (*Dybowskî*); Kapona (*E. S. Ross & R. E. Leech*); Rutshuru (*E. S. Ross & R. E. Leech*); Lualaba Riv., Bukama (*J. C. Bradley*).

Plectroctena strigosa Emery stat. n.

Plectroctena mandibularis var. *strigosa* Emery, 1899 : 469. Holotype worker, SOUTH AFRICA: Natal (*Staudinger & Bang-Haas*) (probably in MCSN, Genoa).

DIAGNOSIS OF WORKER. Similar to *mandibularis* but leading edges of antennal scapes with a row of short, erect, freely projecting hairs. Entire dorsum of head, alitrunk and gaster very densely, finely and closely striate.

FURTHER DESCRIPTION. Worker. TL 15.4–20.1, HL 3.40–4.08, HW 3.00–3.64, CI 87–90, ML 2.80–3.60, MI 79–89, SL 2.60–3.24, PH 1.60–1.84, PL 1.40–1.68, LPI 102–114, DPW 1.08–1.28, DPI 71–77 (10 measured).

Closely related to *mandibularis* and mostly matching the characters of that species, but differing as follows. Funicular segments 3–5 always notably longer than broad. Petiole tending to be somewhat narrower in dorsal view, compare DPI above with that of *mandibularis*, DPI 80–90. Leading (anterior) margin of antennal scapes with freely projecting, erect, short hairs, absent in *mandibularis*. Ventral margins of femora with numerous long, erect, freely projecting hairs. Punctate sculpturation everywhere on head and body secondary to a very fine, dense, usually longitudinal striation which gives the species a matt black appearance to the naked eye. In *mandibularis* the head and gaster are usually shiny black.

Despite the above-listed characters I am not wholly convinced that *strigosa* is a valid species, as *mandibularis* is very variable throughout its wide range. However, shortage of *strigosa* material at the present time and the lack of linking forms between it and *mandibularis* preclude a more detailed investigation. For the present, therefore, it appears best to grant specific status to *strigosa* until sufficient material can be accumulated to decide whether it is deserving of this status or is merely an extreme geographical variant of *mandibularis*.

MATERIAL EXAMINED.

KENYA: Diani Beach (*F. X. Williams*); Mombasa (*F. X. Williams*); Mombasa (*G. M. Allen & G. Brooks*); Diani Beach (*N. L. H. Krauss*); Mombasa, Kilindini (*L. F. Brown*). TANZANIA: Morogora (*A. Loveridge*).

Plectroctena subterranea Arnold

Plectroctena subterranea Arnold, 1915 : 84, pl. 3, figs 23, 23a. Syntype workers, female,

RHODESIA: Bulawayo 14.vi.1913 (G. Arnold); and Shiloh (G. Arnold) (BMNH) [examined].

Myopias subterranea (Arnold); Wheeler, 1922a : 87; 1922b : 785.

Plectroctena subterranea Arnold; Santschi, 1924 : 157, 171.

Plectroctena punctatus Santschi, 1924 : 170. Holotype male, KENYA: Bura Wa Taita, iii. 1912, 1050 m, st. 61 (*Alluaud & Jeannel*) (NM, Basle) [examined]. **Syn. n.**

DIAGNOSIS OF WORKER. Funicular segments 3-5 broader than long. Ocular diameter 0.14-0.20. Labial palp with 2 segments. Head without striae. Full adult colour red-brown.

FURTHER DESCRIPTION. *Worker*. TL 7.6-10.8 HL 1.60-2.20 HW 1.40-1.96, CI 86-89, ML 1.28-1.76, MI 75-80, SL 0.96-1.24, PH 0.72-1.04, PL 0.68-0.88, LPI 109-128, DPW 0.56-0.80, DPI 82-94 (6 measured).

Basal tooth of mandible well developed but the distal tooth represented only by a slightly raised angle. Funicular segments 3-9 distinctly broader than long. Labial palp 2-segmented (single worker dissected). Eyes small, ocular diameter 0.20 at maximum. Occipital margin feebly concave in full-face view, more strongly so in larger than in smaller workers. Propodeal laminae developed but without dentiform prominences. Petiole with dorsal surface uninterrupted in profile by an anterior depression or discontinuity of outline; the dorsal surface with a feeble anterior-posterior slope. In dorsal view the petiole short and broad, only slightly broader behind than in front, and with the posterior surface weakly concave. First gastral tergite without a transverse groove or impression anteriorly.

All dorsal surfaces, sides and ventre of head and gastral sternites with numerous small, fine, widely separated punctures, the spaces between which are smooth and highly polished. Sides of alitrunk and petiole with striae; the striae on the meso- and metapleurae and the sides of the propodeum so dense as to obscure the punctuation, considerably less dense or absent on part or all the sides of the pronotum.

Female. TL 11.8, HL 2.52, HW 2.24, CI 89, ML 1.92, MI 76, SL 1.44, PH 1.28, PL 1.04, LPI 123, DPW 0.92, DPI 88.

Alate, flight sclerites fully developed. Ocular diameter 0.36; ocelli present. Otherwise as worker.

This species was formerly known only from Rhodesia and Malawi but two small workers are present in the MCZ, Cambridge collection, from the Ivory Coast savannah. One of them (a teneral) approaches the lower end of the size range quoted above but the other is very small.

The dimensions of the two are TL 5.6, 6.7, HL 1.26, 1.40, HW 1.10, 1.22, CI 87, 87, ML 0.92, 0.98, MI 73, 70, SL 0.72, 0.80, PH 0.68, 0.72, PL 0.60, 0.64, LPI 113, 113, DPW 0.52, 0.56, DPI 76, 87. Ocular diameter 0.07, 0.08.

The sculpture is somewhat more coarse than in Rhodesian specimens, with the punctures larger and more distinctive, especially on the head and dorsal alitrunk. There is a possibility that these two specimens are in fact referable to a different species, very closely related to *subterranea*, but our present knowledge of the genus does not permit me to separate them.

Santschi's *punctatus*, based upon a single male, appears to be the male of *subterranea* as the holotype compares well with a damaged male of *subterranea* in the BMNH collection.

MATERIAL EXAMINED.

IVORY COAST: Lamto, Toumodi (*J. Lévioux*). MALAWI: Mlanje (*S. A. Neave*); Chiroma Ruu (*R. C. Wood*). RHODESIA: Bulawayo (*G. Arnold*).

Plectroctena ugandensis Menozzi

Plectroctena ugandensis Menozzi, 1932 : 99, fig. 2. Holotype female, UGANDA: Bussu (*E. Bayon*) (location of type not known).

Note: Professore E. Mellini (IE, Bologna) informs me that the holotype of this species cannot be found in the Menozzi collection.

I have not been able to locate the type of this species but judging from the original description I refer two specimens from MCZ, Cambridge to *ugandensis*. Both are alate females and as Menozzi points out, *ugandensis* is very closely related to *subterranea*. When the females of both these species are better known the two may prove to be inseparable.

Characters useful in separating the species include size (*ugandensis* is notably smaller) and the fact that in *ugandensis* the antennal scapes do not reach back to the level of the lateral ocelli, whereas in *subterranea* the scapes easily surpass them.

Dimensions of the two females referred to this species are: TL 9.4–9.8, HL 1.86–1.88, HW 1.64, CI 87–88, ML 1.42–1.44, MI 76–77, SL 1.04–1.08, PH 0.86, PL 0.86–0.88, LPI 98–100, DPW 0.76, DPI 88. Ocular diameter 0.30.

Note particularly the relatively low petiole (LPI in *subterranea* female is 123).

MATERIAL EXAMINED.

ZAIRE: Coquilhatville (?).

A SPECIES PROPERLY EXCLUDED FROM *PLECTROCTENA**Psalidomyrmex mabirensis* (Arnold) comb. et stat. n.

Plectroctena mandibularis subsp. *mabirensis* Arnold, 1954 : 293, figs 3, 3a. Syntype workers, UGANDA: Mabira Forest (*G. Arnold*) (probably in Bulawayo Museum, Rhodesia).

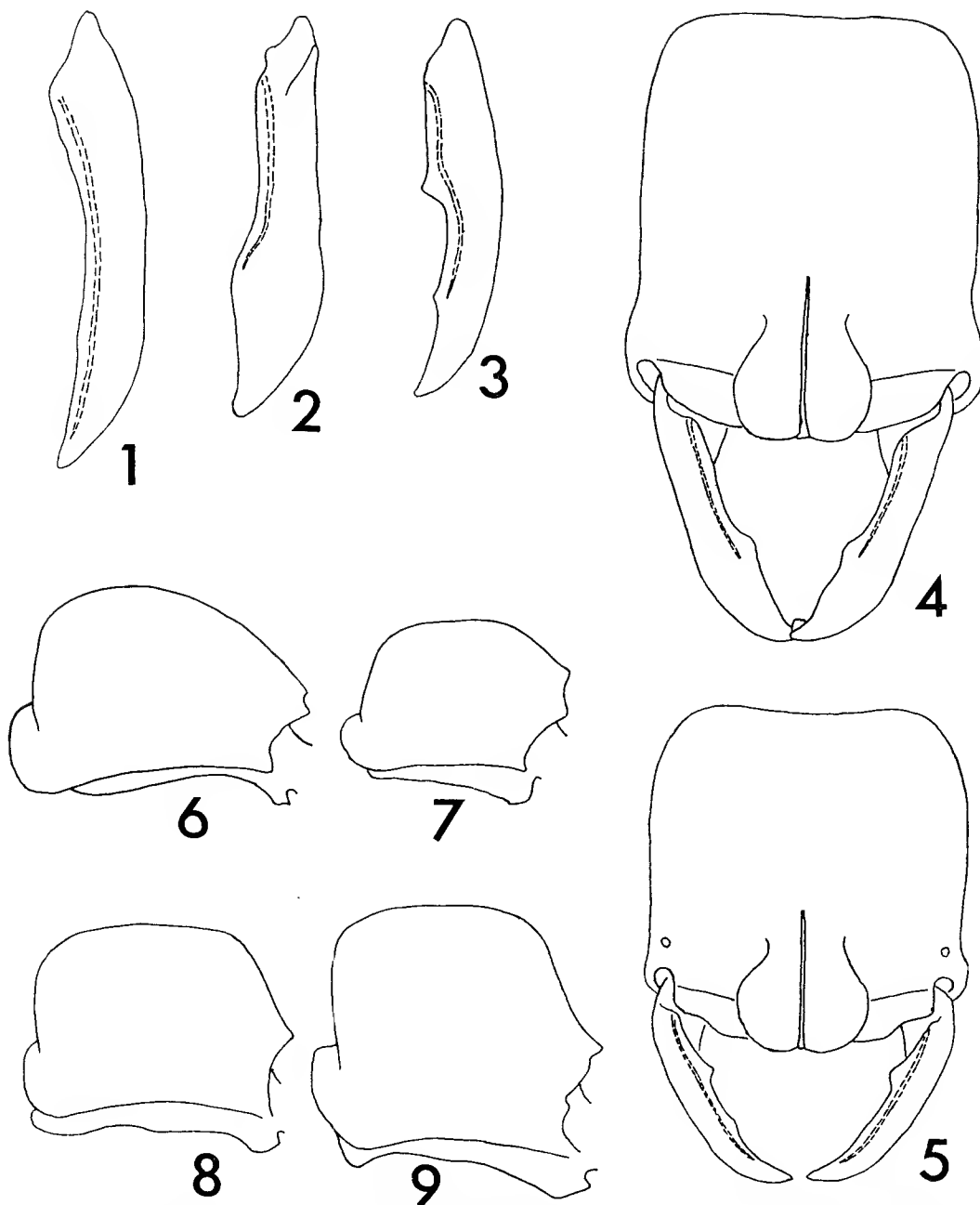
I have not examined the types of this species but from Arnold's description and figures it is apparent that the species belongs to the genus *Psalidomyrmex*, and is related to *foveolatus* André. The description of the sculpturation does not accurately fit any of the commoner species of *Psalidomyrmex* and for this reason, and also to remove any connection with *mandibularis*, *mabirensis* is granted new status as a good species.

ACKNOWLEDGEMENTS

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FIGS 1-3. Dorsal view of left mandibular blade in workers, hairs omitted. 1. *macgeei*, 2. *hastifer*, 3. *minor*, showing characteristic shape of mandible in the genus.
 FIG. 4. Dorsal view of head of *anops*, pubescence and antennae omitted.
 FIG. 5. Dorsal view of head of *cryptica*, pubescence and antennae omitted.
 FIGS 6-9. Lateral view of petiole in workers. Anterior face to the right; pilosity omitted.
 6. *hastifer*, 7. *anops*, 8. *macgeei*, 9. *minor*.

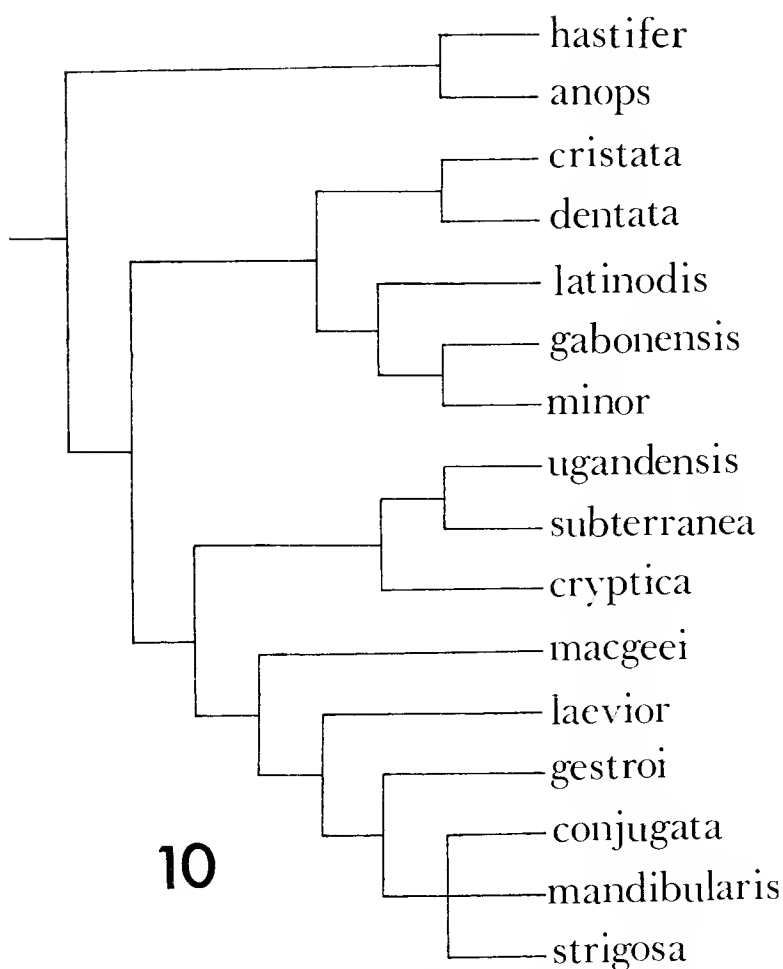


FIG. 10. Dendrogram to show affinities of species in genus *Plectroctena*. Lines do not imply phylogeny.

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